PREMIX BURNER AND METHOD FOR BURNING A LOW-CALORIE COMBUSTION GAS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is the US National Stage of International Application No. PCT/EP2005/050656, filed February 15, 2005 and claims the benefit thereof. The International Application claims the benefits of European Patent application No. 04004137.8 filed February 24, 2004. All of the applications are incorporated by reference herein in their entirety.

FIELD OF THE INVENTION

[0002] The invention relates to a premix burner for burning a low-calorie combustion gas, in particular a synthesis gas. The invention also relates to a method for burning a low-calorie combustion gas.

BACKGROUND OF THE INVENTION

[0003] A burner for gaseous fuels, as used in particular in a gas turbine installation, is known from example from DE 42 12 810 A1. According to this, combustion air is fed through an annular air duct system and fuel is fed through a further annular duct system for combustion. A high-calorie fuel (natural gas or fuel oil) is thereby injected from the fuel duct into the air duct, either directly or from helical blades configured as hollow blades.

[0004] The most homogenous mixture possible of fuel and air should therefore be obtained, in order to achieve combustion with low levels of nitrogen oxide. For environmental protection reasons and because of corresponding legal provisions governing pollutant emissions, the lowest possible level of nitrogen oxide production is an important combustion requirement, in particular for combustion in the gas turbine installation of a power plant. The formation of nitrogen oxides increases exponentially with flame temperature during combustion. If the fuel/air mixture is non-homogenous, a certain distribution of flame temperatures results in the combustion area. The maximum temperatures of such a distribution then determine the quantity of nitrogen oxides formed according to the cited relationship between nitrogen oxide formation and flame temperature. Combustion of a homogenous fuel/air mixture thus achieves a lower nitrogen oxide emission for the same